Task 2.1 Final Report

Dairy Ranking for Participation in Project

For the Project Entitled

Dairy Best Available Technologies in the Okeechobee Basin

SFWMD Contract No. C-11652

Submitted By

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February 28, 2001

Introduction

The Dairy Best Available Technologies project is designed and funded to work with three dairies in the Okeechobee priority basins to identify, select, implement, and monitor appropriate technologies for reducing P levels to a design target of 40 ppb of P. This report presents the initial step in the process of the selecting the dairies that will participate in the project. The twenty-five active dairies in Okeechobee, Highlands, and Martin Counties were considered for the program. Dairies were ranked for participation based on current P discharge concentrations, willingness to participate and commit resources, extent of existing technologies, and management diversity. Each dairy was visited and SFWMD and DEP records evaluated to determine the ranking factors for each dairy.

Selection Methodology for Dairy Participation in the Project

The water quality data and surveys of the existing conditions and management practices for dairies in the Okeechobee basin were reviewed to rank the dairies that will potentially be included in the project. From among the dairies willing to participate, the dairies with the highest P export and the absence of implemented technologies and management diversity received the highest priority for selection. Commitment of dairy resources and funds to ensure successful implementation of the appropriate technologies was also considered.

Determination of P export from dairies was based on the District's dairy monitoring data for the period 1995 through 1999 in order to best represent current conditions, i.e. post Dairy Rule BMP implementation. The assumption that discharge P concentration times the contributing area will be representative of the relative P export from the dairies was made because no flow data are available from the dairies to calculate P loads directly. Though individual discharge sites might be poorly represented by this assumption, on average this assumption should be a fairly valid if used for comparative purposes. The District's "Works of the District" GIS polygon coverage was used to estimate contributing areas.

The current technologies and management diversity of the dairies was determined by review of Department of Environmental Protection (DEP) permit information, and by interviews with the dairymen in the basin. DEP permit and District water quality data was used to develop a preliminary ranking of dairies to prioritize the dairymen interview schedules. Sunshine State Milk Producers (SSMP) assisted in setting up interviews by organizing a project introductory meeting with dairymen on February 1, 2001 in Okeechobee. All but two of the dairymen attended and schedule for dairy visits were made. At the meeting dairymen were introduced to the three-party agreement that will be required for their participation in the project.

The weighting factors for each ranking criteria used to rank the dairies for participation in the project are presented in Table 1. Each dairy will be scored from 1 to 10 for each ranking criteria. Ten (10) is the highest possible factor score and one (1) is the lowest. The final score for each dairy is the sum of the weighted factors times the criteria ranking number

TABLE 1. Ranking Criteria and Weighting Factors for Dairy Selection

	Participation	Relative P Load	Existing Technologies	Management Diversity	Committed Dairy Resources
Source	Interview	District Data	DEP & Interview	Interview	Interview
Weight (%)	Yes or No (make or break)	50	15	10	25

Criteria For Setting Weighting Factor For Each Category

Participation

Participation was based on a direct dairyman response during an interview. Anything other than "we will not participate" was considered a positive response and the dairy was included in the ranking process.

Relative P Load

Points for relative P load will be determined from the following Table 2 based on the dairy's last five-year average P concentration from SFWMD records. A 5-year average of all monitoring sites associated with a dairy was calculated and used as the overall dairy's P concentration.

Table 2. Ranking Points for Relative P Load from Dairy

P Concentration Range (PPB)	Points (Weighting factor 50%)
>5000	10
4500 – 5000	9
4000 – 4500	8
3500 – 4000	7
3000 – 3500	6
2500 – 3000	5
2000 – 2500	4
1500 – 2000	3
1000 – 1500	2
500 – 1000	1
< 500	0

Existing Technologies

The level and sophistication of existing BMPs and technologies on the dairy were determined by site visits and interviews with dairymen. The following Table3 outlines the point schedule for this category.

Table 3. Ranking Points for Level of Existing Technologies

Existing Technologies	Factor Points (Weighting factor 15%)
No Technologies beyond minimum Dairy Rule design	10
Enhanced Dairy Rule Technologies (high HIA confinement)	7
Technology(ies) that is sequestering or moving significant manure P offsite	5
Edge of farm treatment	3
Technology(ies) that is controlling 100% of manure P	0

Management Diversity

Management diversity refers to the breath and depth of management and technical skills available on a dairy to manage and operate various P abatement technologies. The following Table 4 outlines the point schedule for this category.

Table 4. Ranking Points for Level of Management Diversity

Management Diversity	Factor Points (Weighting factor 15%)
Very High Diversity	10
High Diversity	8
Moderate Diversity	5
Low Diversity	3

Dairy's Willingness to Commit Resource to Project

The willingness of dairies to commit resources to ensure the project's success either through direct funding or in-kind expenditures was considered extremely important. This factor will be critical for Board approval for the final project. The following Table 5 outlines the point schedule for this category.

Table 5. Ranking Points for the Dairy's Willingness to Commit Resources to Project

Dairy's Willingness to Commit Resource to Project	Factor Points (Weighting factor 25%)
Very High Commitment	10
High Commitment	8
Moderate Commitment	5
Low Commitment	3
No Commitment	0

Dairy Ranking Results

The above ranking methodology was used to complete the assessment of the twenty five dairies in the Okeechobee basin. Table 6 provides the preliminary ranking for dairy participation in the project. The data used in this ranking were based on dairy visits that take took place during the period of February 1 to February 27. All dairies were visited except for Bishop Brothers dairy in Florida. The project were very familiar of this dairy, so it assessment was included. A brief summary of the site visits is presented in Appendix A.

As can be seen the highest three ranked dairies are Butler Oaks, Dry Lake 2, and Dry Lake 1. C&C Dairy is the next highest ranked, but is not in one of the priority basins. The next four dairies in the ranking are Davie 1 & 2, Flying G, and Underhill. Based on this dairy ranking assessment, it is recommended that Butler Oaks and Dry Lake 1 be selected for participation in the project. Dry Lake 1 is being recommended over Dry Lake 2 because Dry Lake 2 is already participating with the Farm Foundation on a program to improve their waste management system. Dry Lake 1 and 2 are now two separate dairy operations. The third dairy to be selected is not as clear-cut because the next four dairies are so closely ranked. Each of the four dairies would be a good choice, however since Davie 1 and 2 have a single discharge and represents a very diverse operation from the other two selected dairies, it is recommended that Davie Dairy be considered as the third dairy to participate in the project.

It is recommended that if a contractual arrangement cannot be reached with the dairies recommended above, then the following dairies should be considered in the following order: Flying G, Underhill, and Dry Lake 2.

Table 6. Selection Factors and Ranking for Okeechobee Dairies for Participation in Dairy BAT Project

Dairy Reference #	Dairy Name	Weighting Factor					Ranking Score	Rank
		Participation	Relative P Load	Existing Technologies	Management Diversity	Committed Dairy Resources		
	Weight (%)	Yes=1 No=0	(50%)	(15%)	(10%)	(25%)		
1	B4	1	2	8	7	4	39	13
2	BISHOP BROS	1	1	8	5	5	34.5	19
3	BUTLER OAKS	1	10	8	6	8	88	1
4	C&C	1	7	8	5	5	64.5	4
5	C&M RUCKS	1	1	7	6	7	39	14
6	DAVIE 1	1	4	6	8	10	62	5
7	DAVIE 2	1	4	6	8	10	62	6
8	DRY LAKE 1	1	7	8	7	10	79	3
9	DRY LAKE 2	1	10	1	7	10	83.5	2
10	FLYING G	1	5	8	7	7	61.5	7
11	HW RUCKS 1	1	0	6	8	7	34.5	20
12	HW RUCKS 2	1	0	7	8	7	36	16
13	HW RUCKS 3	1	3	8	8	7	52.5	9
14	LARSON 1	1	1	5	8	5	33	21
15	LARSON 5	1	6	1	8	4	49.5	10
16	LARSON 8	1	2	1	8	4	29.5	22
17	L.C. Dairy	1	1	1	8	3	22	25
18	MCARTHUR 1	1	3	4	9	6	45	12
19	MCARTHUR 2	1	3	5	9	6	46.5	11
20	MCARTHUR 3	1	1	4	9	6	35	18
21	MCARTHUR 4	1	1	5	9	6	36.5	15
22	NEW PALM	1	1	8	4	3	28.5	23
23	PW BISHOP (Old Williamson)	1	2	8	4	4	36	17
24	TRIPLE G	1	1	8	3	3	27.5	24
25	UNDERHILL	1	3	7	7	10	57.5	8

APPENDIX A

Brief Summary of Dairy Site Visits